

UNITED STATES DEPARTMENT OF COMMERCE  
WEATHER BUREAU  
WASHINGTON

September 1, 1964



IN REPLY, PLEASE ADDRESS  
CHIEF, U. S. WEATHER BUREAU  
WASHINGTON 25, D. C.  
AND REFER TO  
C-3.1

FILE: 922  
Memo

MEMORANDUM

TO : Regional and State Climatologists, NWRC, Field Aides (HC), Field Aides, River Forecast Centers, River District Offices, Regional Substation Management Units, and Area Hydrologic Engineers (with copies to Regional Offices, Agricultural Service Offices, and Agricultural Forecast Offices for information)

FROM : Director of Climatology

SUBJECT: Climatological Services Memorandum No. 105

1. 17th MEETING OF THE ADVISORY COMMITTEE FOR CLIMATOLOGY: The Committee met at the headquarters of the American Meteorological Society in Boston, Massachusetts, on June 16, 1964. The following were present:

- Prof. A. V. Havens (Chairman)
- Dr. R. A. Bryson (Member)
- Dr. K. R. Knoerr (Member)
- Dr. J. R. Mather (Member)

Also present were Mr. W. H. Bailey (NRC) and Dr. H. E. Landsberg.

A. The Committee was briefed on the changes in Weather Bureau organization and the new lines of authority and responsibility in the Weather Bureau Field Services. The new alignment of regions was briefly discussed and the implications of the differences between these regions and the Agricultural Experiment Station areas pointed out. The proposed internal division and branch structure of the Office of Climatology and the new temporary areas of responsibility of Area Climatologists were presented.

B. The decennial climatic census 1951-1960 for domestic areas is in its wind-up stages. Only Bulletin W Supplement remains to be partially done but this will be finished early next fiscal year. World Weather Records for the same interval lag considerably behind. Data for many areas have not yet been received. As each large segment of the earth is covered by information, separate volumes of data will be published. North America will be the first to be completed. Funding for final compilation and printing will be a problem.

C. Reports on joint computer utilization, conversion of magnetic tape data to microfilm, status of the FOSDIC project, recent awards have been circulated with the agenda to the Committee. These were briefly discussed. They required no action.

(Climatological Services Memorandum No. 105)

WASHINGTON, D.C.  
9-1-64

D. Although no new funds were available in fiscal year 1964 reprogramming resulted in the establishment of a full-time State Climatologist position in Minnesota. No changes are anticipated in the State Climatologist program in FY '65.

E. At various points during the meeting the Committee discussed items pertaining to observational procedures and network. Some of the important points are listed below:

- (a) The Committee desires to have an up-to-date report on the status of the planned urban network.
- (b) The Committee endorses the move to have a compilation of an inventory of all weather observing stations not in the official Weather Bureau network.
- (c) The Committee deplored the lack of uniformity of wind measuring equipment and pointed out requirements for information on peak gusts (e.g., by insurance interests).
- (d) The Committee would like to get a status report on the network of micro-meteorological stations for agricultural purposes and on the status of equipping bench mark stations for making more complete climatological observations than heretofore.

In this connection the Committee discussed the feasibility of having representative measurements of various fluxes (radiation, heat, moisture). Among the desirable research undertakings would be one that establishes how various types of surfaces act in partitioning energy.

F. The Committee noted the efforts to replace the current system of producing historical weather charts by products of the National Meteorological Center. Suggestions were made that the upper air charts be so designed as to carry wind data as well as contours so that deviations from geostrophic conditions can be established. Also it appears highly desirable that isotherms be added to the historical upper air charts. In this connection it was also pointed out that there will soon be 20 years of fairly good (northern hemispheric) coverage of upper air data and grid point intersection information for upper levels. (Note: The latter is in continuation of the old Arowa card deck of which NWRC has only an unchecked copy but the University of Wisconsin, Department of Meteorology holds a checked deck).

The Committee would like to have the Office of Climatology submit for its next meeting a survey of available data and possible plans for a 20-year coverage upper air atlas for the Northern Hemisphere.

G. The Committee also took favorable note of the foreign area projects already under way and contemplated under Public Law 480.

Dr. Bryson pointed out the desirability of including in the proposed study of the relationship between the monsoon and the general circulation (India), a survey of the various aspects of the influence of haze

(possibly due to cultural practices) and its diabatic effect in relation to the monsoon circulation.

H. Dr. Landsberg gave the Committee an outlook on the FY '65 budget which dictates some stringent economy moves. After reviewing various targets for reduction of effort, the area which will least affect large circles of users of climatological data has been determined to be punching, quality control, publication and summarization of 24-hourly data for first order stations.

The Committee agreed that for most climatological purposes 3-hourly observations (8 equispaced hours per day) will yield satisfactory results. It recommends that the Office of Climatology redesign the Local Climatological Data Supplement for 3-hourly observations and circularize a proposal to the Committee members for comment at an early date.

I. The Weekly Weather and Crop Bulletin, as one of the Weather Bureau's most important publications, and its redesign was discussed in detail. There was agreement that this bulletin could stand considerable revamping in order to be of maximum usefulness.

The placing of current maps on the front page would be an improvement. A map of cumulative departures for the growing season in lieu of a 2- or 3-week departure of precipitation should be considered. (In that case perhaps different basic seasons would have to be used for the SW, S, and N).

Intervals of 0, T; 0.01-0.25"; 0.25-0.75"; 0.75-2.00"; 2.00" for hatching in weekly precipitation charts appear satisfactory. A note explaining the underlying reasoning should be published from time to time.

The Committee felt that the terminology "departure from normal" should be avoided because of its ambiguity and "departure from average" be substituted. In the weekly table the precipitation departure in inch values should be eliminated and quintiles be substituted, using perhaps a symbolism of the following type: min.; --; -; a; +; ++; max. In the preview table for the coming week the "normal precip amount" should be replaced by the amount showing 50 per cent probability of being exceeded.

Further consideration should be given to charts which have specific agricultural use and meaning. These could vary from week to week. In particular attention should be paid to meteorological elements contributing to plant diseases. For example, a chart of resultant weekly wind might show relations to leaf hopper migration.

J. Among miscellaneous items discussed by the Committee were:

- (a) The publication "Selective Guide to Published Climatic Data Sources" (KMRD No. 4.11), might be further improved by better cross referencing. The index is not fully efficient. The Committee members will individually send suggestions for improvement. Further consideration with the Committee prior to

reprinting is indicated. A companion publication on unpublished data should be considered.

- (b) Definition of the term "normal" and reduction of its abuse seems desirable. To be weighed is whether the U. S. representatives on the WMO Commission for Climatology can suggest abandoning the term in international usage.
- (c) Can metric system and Celsius degrees be expanded in climatological data publications?
- (d) Office of Climatology should consider publishing days with 0.1" precipitation for first order stations also to make data comparable to cooperative station data.

K. The Committee discussed informally potential candidates for replacement of a member due for rotation.

L. The next meeting of the Committee is planned for early or middle November at the Office of Climatology in Washington.

2. ARRAYS AND NARRATIVE WEATHER SUMMARIES: The NWRC is on a current schedule with the Climatological Data bulletins. In order that your comments concerning the arrays may be incorporated in the published data, please airmail your comments to the NWRC as soon as possible after receipt of the array. This is important since the tables must be run on the Honeywell for all states at the same time in order to keep the cost as low as possible.

The Narrative Weather Summaries should also be airtailed to the NWRC. These should be sent within a day or two after receipt of the Preliminary Climatological Data table. If NWRC receives a card stating that a summary will be written, the bulletin copy will be held until the summary is received. Otherwise the copy will go to the printer as soon as it is completed. If no card is received NWRC will make no inquiry about the card but will assume no summary is to be written.

3. SELECTION OF SNOWFALL STATIONS FOR PUBLICATION IN CD: Re - par. C-0503c of Volume III, WB Manual. The referenced paragraph is as follows:

"Selection of stations to be carried in this table should be made and kept current by the NWRC through consultation with State Climatologists. The criteria for selecting these stations are:

- A. Quality of record.
- B. Approximately uniform areal spacing.
- C. Usefulness of the data."

In view of the increased cost of processing poor quality snowfall records, etc., the NWRC would benefit by any suggestions State Climatologists can provide for improving the network of snowfall stations and deletion of unneeded or unsatisfactory stations from the selected network.

4. REGIONAL CLIMATOLOGISTS MEETING: A meeting of Regional Climatologists was held July 13-15 at Suitland. The role of climatology in the reorganized WB was discussed with Dr. Simpson, Mr. Hahn, Mr. Thompson, and members of O/C. Also each Regional Climatologist discussed the climatological plans, programs and problems of his region.

5. TIME OF CLIMATOLOGICAL OBSERVATIONS: Re - CSM 3, Item 3; CSM 4, Item 4; CSM 7, Item 7; CSM 18, Item 5; and paragraph 1210, Circular B.

The following table indicates the percent of stations with a.m. observations shown in the Station Index of Climatological Data for a sample of 3 widely separated states:

<u>Month and Year</u>	<u>Percent</u>
January 1950	35
March 1951	28
March 1953	27
June 1958	32
December 1962	33
November 1963	31

Climatological observations at substations are preferred late in the day. This has been discussed in considerable detail in the referenced CSM items. These reasons are summarized here as:

- (a) The bias which results from the tendency of the thermometers to repeat on the following day the temperature at time of observation of the preceding day. If observations are taken in the early morning when temperature is near the minimum, the observed minimum and mean temperatures will be slightly too low, on the average. Conversely, observations taken near the time of the maximum will display a slight positive bias.
- (b) Both maximum and minimum temperatures are read on the usual date of occurrence if observations are made in the evening.
- (c) Evening observations are apt to be more homogeneous than morning observations.
- (d) A minor change of an hour or so in observation time has a larger effect on the records during the first few hours after sunrise.
- (e) Degree day data from p.m. stations are more comparable to degree day data on a midnight to midnight basis.

The purpose of this item is to encourage all those concerned with substation observations to continue to work toward a climatological observation in the evening.

6. CHANGE OF STATE AND REGIONAL CLIMATOLOGISTS: Mr. A. D. Robb, State Climatologist for Kansas since the beginning of the State Climatologist program, has retired as of mid-July after 37 years of service.

The Kansas State Climatologist's office has been moved to the Kansas State University campus at Manhattan. The address is 403 Physical Science Bldg., Kansas State University, Manhattan, Kansas 66504. Mr. Merle J. Brown, Pacific Area Climatologist is the new Kansas State Climatologist. Mr. Saul Price is the new Pacific Regional Climatologist. He has been in the State of Hawaii for 13 years and was most recently associated with the Mauna Loa Observatory.

The North Carolina State Climatologist's office has been moved to the campus of North Carolina State in Raleigh. The mail address is: P.O. Box 5204, Raleigh, N. C. 27607.

7. FEDERAL TELECOMMUNICATIONS SYSTEM (FTS): All State and Regional Climatologists are asked to send us the phone number(s) (including Area Codes) by which they may be reached on the FTS. Our numbers are:

Dr. Landsberg or Mr. Schloemer	301-440-7288
Mr. Harshbarger or Mr. Hagarty	301-440-7355

8. WEEKLY WEATHER AND CROP BULLETIN: All State Climatologists are asked to send us 2 copies of a recent Weekly Weather and Crop Bulletin.

9. CARD TO MAGNETIC TAPE CONVERSION OF 1009 CARD DATA: The following is taken from a memo on the above subject and is included here for general information:

- "1. The amount of data for each day of 1009 type record is so small that usually a tape record containing one year-month of data is not too large to read or write as a unit. In this case, each record would have as a minimum identification the station number, year and month of record. Station name, latitude and longitude, elevation, and other useful auxiliary information might well be recorded also. Then, in 31 uniform groups subdivided into elements of field, the actual data for each day are recorded. Of course, this implies that the data for the 15th day, for example, is always recorded in the 15th of the 31 groups, and thus it is unnecessary to record day number unless it is desired for redundancy check.
- "2. Most computers easily handle alphanumeric information, and the most usual tape format is 6-bit BCD code. In this code any meaningful over-punches may be included essentially as they are, or re-coded to more easily used forms. Obviously, it is poor economy to lose any useful information on the translation. In the specific case of precipitation, certainly uniformity should be the rule, and whether it is carried as x--- or 0000 is much less important. We would tend to lean toward the 0000, but confess that tapes now being recorded here use x---. Actually, of course we also have to allow for trace and accumulation coding, so some non-numeric are involved in any case.
- "3. We have no strong feeling regarding the flagging of interpolated data except as it comes under the heading of useful data as mentioned above. In any case, attention should be called to the fact that interpolated data are included, in all documentation."

10. DISTRIBUTION OF "THE CLIMATE OF TEXAS AND THE ADJACENT GULF WATERS": "The Climate of Texas and the Adjacent Gulf Waters", by Robert B. Orton, SC/Texas, was published from a report prepared for the National Aeronautics and Space Administration, Manned Spacecraft Center, Houston, Texas. It furnishes meteorological information and data necessary for the testing of certain spaceflight apparatus, and for the selection of possible spacecraft landing sites. Field distribution of the publication was limited to the State Climatologists and First Order stations in Texas, New Mexico, Oklahoma, Louisiana, and Arkansas, to all Regional (Area) Climatologists and Regional Directors, and to the National Severe Storms Laboratory, Norman, Oklahoma. An extra copy was furnished each Regional Climatologist for possible circulation within his area.

11. JEFFERSON AND HOLM AWARDS: Certificates for 5 Jefferson and 26 Holm awards have been distributed through the Regional Offices, along with a press release and related material. Release date was August 14, 1964.

The Subcommittee on Substation Awards wishes to thank all concerned for a fine job of submitting nominations and preparing citations and supporting statements.

12. CREDIT FOR SUMMARIES AND TABLES IN OTHER THAN WEATHER BUREAU PUBLICATIONS: Quite often statistical or summarized material is furnished to an outside organization for inclusion in a publication. If the WB portion consists entirely or primarily of data the acknowledgment should be "Data from U. S. Department of Commerce Weather Bureau". However, if the material consists of or includes considerable textual matter the author should be recognized by name and by affiliation such as, "John Doe, U. S. Weather Bureau State Climatologist for State, Department of Commerce".

We recognize that the editor of the publication may prefer a somewhat different acknowledgement, and in those cases some compromise may be required.

13. COORDINATION WITH USGS IN LOCATING NEW CLIMATOLOGICAL BENCHMARK STATIONS: Staff members of the Office of Climatology and the Office of Hydrology have made preliminary arrangements with the Water Resources Division of USGS to coordinate the selection of future Hydrologic Benchmarks and Climatological Benchmark stations in the U. S. To date, the Geological Survey had selected 17 Hydrologic Benchmarks, which are intended to monitor natural long-term variations of the hydrologic regime in small watersheds undisturbed by human activities. The Survey hopes to select a total of about 100 such Benchmarks in the next few years.

Additional Climatological Benchmark sites are also being planned to supplement the present Weather Bureau network. Ultimately, about 30 new sites will be chosen. Unlike earlier Climatological Benchmark selections, however, most of these are to be established exclusively on the basis of excellent present exposure and the likelihood of no appreciable environmental change in the foreseeable future. The availability of long past records at these sites, homogeneous or otherwise, will not be a criterion in their selection.

Experience in the Benchmark program has indicated that the stations having the longest and most homogeneous past records are seldom those for which the present exposure and prospects of future stability would be adequate for the expanded observational program and instrumentation being planned for them.

Inasmuch as the USGS is seeking similarly undisturbed locations for its Hydrologic Benchmark program, and as many advantages would accrue to both USGS and the Weather Bureau programs if the Hydrologic and Climatological Benchmarks were at least partially combined, close cooperation between the two agencies in this regard is being arranged.

It is anticipated that a field representative of O/C will be invited to join the USGS team at the time it studies prospective sites for the Hydrologic Benchmark program in his locality. The O/C representative would be asked to select the most suitable location for a Climatological Benchmark station in the vicinity of each prospective Hydrologic Benchmark watershed. Many of the sites, especially those in remote mountainous areas, may be too inaccessible for consideration in the climatological program, but many others will hopefully be satisfactory. In some instances where the exposure is inadequate for a Climatological Benchmark station, it may nonetheless be desirable to inaugurate an ordinary climatological substation program there. It is likely that certain ones of these new stations will be appropriate for inclusion in the "b" network.

Further developments in this joint cooperative plan will be reported on from time to time.

14. NUMBER OF DEATHS OR INJURIES REPORTED IN STORM AREA: The following instruction concerning WB 614-3 is taken from Paragraph C-0513 of Volume III of the Weather Bureau Manual:

"Number of Deaths or Injuries. Enter the number obtained from sources usually regarded as reliable. Use zero (0) for none, a question mark (?) when unknown, and leave blank where appropriate such as for funnel clouds aloft, and possibly waterspouts, etc. Deaths or injuries not resulting directly from the storm should not be included. For example, any deaths or injuries resulting from traffic accidents on wet or slippery roads are not considered as storm casualties. Neither should deaths resulting from heart attacks while shoveling snow, or attributed to other overexertion against which normal prudence should have been exercised, be considered as 'storm deaths'."

A review of STORM DATA for January and February 1964 indicates that some State Climatologists are still including deaths from traffic accidents and overexertion in the count of number of persons killed.

15. MAILING OF FORMS 612-13 TO NWRC BY RIVER DISTRICT OFFICES: River District Offices are reminded that the NWRC needs all Forms 612-13 by the 10th to the 12th of the following month if they are to be processed by machine on a current basis. Any forms received later than this must be processed

partially by hand in order to be included in the current bulletin, or if received too late they must be held for Delayed Data.

In order to speed up the receipt of these forms in the NWRC it is requested that you send them in an envelope marked airmail (wherever this will expedite transmission) and first class. Also, if at all possible, please mail the forms to the NWRC the next day after they are received in your office.

16. QUARTERLY PRODUCTIVITY REPORT - APRIL-JUNE 1964: A summary of these reports indicates the following:

1.	Soil Conservation Summaries completed	18
2.	Consultations on Cooperative Technical Projects	456
3.	Visits to Weather Bureau Offices (non-local)	88
4.	Scheduled or Special News Releases	372
5.	Radio and Television Broadcasts:	
	a. Technical	7
	b. Popular	5
6.	Professional Conferences, Meetings, etc.:	
	a. As an invited participant	50
	b. Other	40
7.	Speaking Engagements:	
	a. Professional Groups	10
	b. Lay Groups	44
8.	Substation Summaries published	17
9.	Inquiries Answered (est.)	3000
10.	Publications Distributed (est.)	2650

In addition, the following activities were reported:

20 climatological articles published.

10 papers published by others with help from State Climatologists.

A number of State Climatologists continued their educational programs.

The Arizona State Climatologist computed precipitation and temperature averages for use in the local Weekly Weather and Crop Bulletin.

Two offices, Kansas and North Carolina, were moved to quarters on University campuses, and preliminary work was done on moving the Minnesota and Connecticut offices to University campuses.

Punch card records were edited for placing on tape, and missing data estimated.

Summaries of Montana flood were prepared.

Travel included visits to present awards to cooperative observers, to experiment stations, inspection of severe storm activity and to other cooperating governmental and non-governmental agencies.

The text of the Climate of the States for Puerto Rico and the Virgin Islands was translated into Spanish for publication in 1965 by the Puerto Rico Department of Public Instructions.

The Georgia State Climatologist served as a judge for the Georgia State Science Fair.

A number of climatological studies were continued at the end of the quarter. Included are:

- A climatic study of the western San Joaquin Valley, California.
- Climatological effects on apple growth, production and fertilizer utilization.
- Studies of evapotranspiration over various crops.
- Investigation of extreme winter temperatures and weekly rainfall in Florida and low temperature probabilities in North Carolina.
- A climatic study for the Golden Isles in Georgia, the Outer Banks in North Carolina, and for French Lick, Indiana.
- Comparison of soil temperature instruments at Ames, Iowa and a soil temperature study in West Virginia.
- Solar radiation relationships at Ames, Iowa.
- Crop response studies in Kentucky.
- A cooperative air pollution project in Kentucky.
- Snowfall studies for six states.
- A study of possible local topography effects on rain gages in a micro-network.
- A climatological study of Glacier Park glaciers, Montana.
- A precipitation probability study in Nebraska.
- A study of the effect of weather on high school pupils in New Jersey.
- Studies of interdiurnal temperature changes and of heavy rainfall in New Mexico.
- Weather and corn in New York.
- A freeze bulletin for Oklahoma as well as studies of hail and evaporation in Oklahoma.
- Freeze probabilities in Virginia.
- A survey of wind data available in Oregon.
- Rainfall distribution in South Carolina and a statistical approach to South Carolina climate.
- Drought in West Tennessee and in West Virginia.
- An agroclimatic atlas for Texas.
- Study of precipitation regimes in Utah.
- Studies of the climate of caves in Utah.
- A mountain climatology research project in Utah.

Tornadoes in Wisconsin.

Thunderstorm study in Virginia.

Evapotranspiration in Wyoming.

Temperature and precipitation probabilities in Wyoming.

Evapotranspiration and estimation of soil moisture in Ohio.

Many of the above studies are being carried out in cooperation with Experiment Station or University representatives.

Some State Climatologists reported changes in operations that tended to increase efficiency, save time or increase productivity. Included were:

An arrangement with South Dakota State University to prepare about 72 substation climatological summaries using electronic computer equipment.

Revision (in cooperation with the local USDA Agricultural Statistician) of the stations in the Arizona Weekly Weather and Crop Bulletin to afford more rapid copying of data.

Use of mail instead of long distance telephone for transmission of material for the Kentucky Weekly Weather and Crop Bulletin.

Summarizing frequently requested rainfall data to simplify answering requests.

Cooperation with USGS in Oklahoma City in receiving teletype data off the local loop. This facilitates preparation of storm data and eliminates the need for a drop on the local teletype loop in the SC's office.

17. NUMBER OF PAGES IN CLIMATOLOGICAL PERIODICALS: Re - Item 5, CSM 100. The following table shows the number of pages of each of the climatological data publications printed during calendar year 1963:

Storm Data	106
Miscellaneous	691
Mariners Weather Log	240
Weekly Weather and Crop Bulletin	416
Monthly Climatic Data for the World	373
Climatological Data, National Summary	724
Hourly Precipitation Data	3,928
Local Climatological Data, Monthly & Annual	4,235
Local Climatological Data, Supplement	12,096
Northern Hemisphere Bulletin	8,226
Climatological Data, States	8,243
Total	38,640

CSM No. 105 - 12

18. PUBLICATIONS DISTRIBUTED TO STATE AND REGIONAL CLIMATOLOGISTS SINCE CSM 104:

"Roots of Modern Climatology", H. E. Landsberg, reprint from Journal of Washington Academy of Sciences, 54, 130-141 (1964).

"A Note on the History of Thermometer Scales", H. E. Landsberg, reprint from Weather, January 1964, Volume XIX, No. 1.

"History of Weather Bureau Barometric Pressure Measurements", Key to Meteorological Records Documentation No. 3.021, J. H. Hagarty, 1964.

"History of Weather Bureau Climatological Record Forms for Surface Synoptic and Airway Observations", Key to Meteorological Records Documentation No. 2.211, J. H. Hagarty, 1964.

"The Distribution of Maximum Annual Water Equivalent of Snow on the Ground", H. C. S. Thom - manuscript - June 1964.

Sukhoveis and Drought Control translated from Russian by the Israel Program for Scientific Translations.

"The Hail Hazard to South Carolina Agriculture", Clemson College, South Carolina, June 1964.

"South Carolina Hurricanes" by John C. Purvis - South Carolina Civil Defense Agency, 1964.

"Late Spring and Early Fall Low Temperatures in Vermont", Hopp, Varney and Lautzenheiser, Bulletin 639, Agricultural Experiment Station, University of Vermont, Burlington, June 1964.

"Forecasting Air Pollution Potential", U. S. Department of Health, Education and Welfare, Public Health Service.

"Freeze Probabilities in Tennessee", Pickett and Bailey, Bulletin 374, Agricultural Experiment Station.

*R. W. Schloemer*  
for H. E. Landsberg

GUIDE TO CLIMATOLOGICAL SERVICES  
MEMORANDUM NO. 105

<u>Item</u>		<u>Page</u>
1	17TH MEETING OF THE ADVISORY COMMITTEE FOR CLIMATOLOGY. . . . .	1
2	ARRAYS AND NARRATIVE WEATHER SUMMARIES . . . . .	4
3	SELECTION OF SNOWFALL STATIONS FOR PUBLICATION IN CD. . . . .	4
4	REGIONAL CLIMATOLOGISTS MEETING. . . . .	5
5	TIME OF CLIMATOLOGICAL OBSERVATIONS. . . . .	5
6	CHANGE OF STATE AND REGIONAL CLIMATOLOGISTS. . . . .	5
7	FEDERAL TELECOMMUNICATIONS SYSTEM (FTS). . . . .	6
8	WEEKLY WEATHER AND CROP BULLETIN . . . . .	6
9	CARD TO MAGNETIC TAPE CONVERSION OF 1009 CARD DATA	6
10	DISTRIBUTION OF "THE CLIMATE OF TEXAS AND THE ADJACENT GULF WATERS". . . . .	7
11	JEFFERSON AND HOLM AWARDS. . . . .	7
12	CREDIT FOR SUMMARIES AND TABLES IN OTHER THAN WEATHER BUREAU PUBLICATIONS. . . . .	7
13	COORDINATION WITH USGS IN LOCATING NEW CLIMA- TOLOGICAL BENCHMARK STATIONS . . . . .	7
14	NUMBER OF DEATHS OR INJURIES REPORTED IN STORM AREA . . . . .	8
15	MAILING OF FORMS 612-13 TO NWRC BY RIVER DISTRICT OFFICES. . . . .	8
16	QUARTERLY PRODUCTIVITY REPORT - APRIL-JUNE 1964. . . . .	9
17	NUMBER OF PAGES IN CLIMATOLOGICAL PERIODICALS. . . . .	11
18	PUBLICATIONS DISTRIBUTED TO STATE AND REGIONAL CLIMATOLOGISTS SINCE CSM 104 . . . . .	12

